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ABSTRACT

This article discusses how instant video revisiting (IVR) promotes reflective thinking for both teachers and children. IVR was used as a daily classroom experience with both the children and the teachers throughout one semester in two preschool classrooms with children 2.5 to 5 years old. The teachers used a digital video camera to generate data to help them understand the behavior of the children and revisit the children's actions immediately, with the children using the video clips to extend their learning. Two classroom examples illustrate how IVR supports the children's learning and the teacher's reflection of this learning. The first example describes how IVR helped the children reflect on their actions and solve their own conflicts. The second example describes the use of IVR to scaffold the children's idea of the middle of a story, thereby strengthening their own thought processes in relation to a story construction. (Author)

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Instant Video Revisiting for Reflection: Extending the Learning of Children and Teachers

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Abstract

This article discusses how instant video revisiting (IVR) promotes reflective thinking for both teachers and children. IVR was used as a daily classroom experience with both the children and the teachers throughout one semester in two preschool classrooms with children 2.5 to 5 years old. The teachers used a digital video camera to generate data to help them understand the behavior of the children and revisit the children's actions immediately, with the children using the video clips to extend their learning. Two classroom examples illustrate how IVR supports the children's learning and the teacher's reflection of this learning. The first example describes how IVR helped the children reflect on their actions and solve their own conflicts. The second example describes the use of IVR to scaffold the children's idea of the middle of a story, thereby strengthening their own thought processes in relation to a story construction.

Overview

In our preschool classrooms of 2.5- through 5-year-old children, the video camera is one of the most significant tools that we use to generate data to understand the children and to develop an emergent curriculum. The children are comfortable with the video cameras because teachers use them daily, often interacting with the children while the camera is recording. Instant video revisiting (IVR) is a technique in which the children view videotaped observations of their learning experiences. IVR (Forman, 1999) is also a daily classroom experience with both the children and the teachers. The advantage of IVR is that it provides the continuity for deepening a child's understanding of that experience. In this manner, the video frames serve as "learning tools" for the children's construction of knowledge and the teacher's reflection of this learning. In this paper, we will illustrate how IVR increases reflective thinking for both teachers and children.

The two episodes we discuss reveal: (1) how IVR turned a teacher into an observer and helped her discover the children's true intentions during a social conflict while also providing the children the opportunity to discuss the situation with themselves and others, and (2) how IVR allowed one child to contrast a sequence of video frames with the sequence of drawn symbols to determine whether his story had a beginning, a middle, and an end—the criteria necessary for analyzing whether his play was complete. In the first example, the revisiting discourse helped children solve their problems while also

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creating empathy for one another. The story analysis provided by IVR in the second example promoted the development of high-level thinking skills on the part of the child who was forming whole-to-part relationships, locating the parts of the story relative to their placement (beginning, middle, end), and making decisions about their placement according to the meaning he had attached to his choices. This process encouraged him to metacognitively reflect upon his own thinking, that is, the meaning of his symbols and their purpose in story structure (Forman & Fyfe, 1998).

The Purpose of Revisiting and Instant Video Revisiting

The innovative educators of Reggio Emilia, Italy, have introduced the concept of documentation and revisiting. Documentation is both a process and product that seeks to represent children's learning. Documentation provides a way for children to revisit their experiences and extend their thinking. Teachers revisit documentation to better understand children's thinking and to inform their teaching practice. They revisit the children's work to see what just occurred, to listen again, and to gain further understanding. Revisiting is not merely asking children to remember what happened in a learning situation or event. Rather, the intent of revisiting is to recall past experiences as a platform for further exploration of new ideas with the children (Rinaldi, 1998; Forman & Fyfe, 1998).

Revisiting is a tool for connecting prior experience to further learning. For example, a child sees a videotape of a disagreement where she grabs a toy from her friend and walks to another area of the classroom to play with it. While viewing the videotape, she says, "He isn't happy when I take the truck." She reveals that she is able to use the viewing experience to communicate that she now sees something she did not know before—that her friend was upset when she took the toy. Revisiting also provides both teachers and children with reflections on their objectives of teaching and learning and promotes continuity across a given activity (Hong, 1998). Thus, revisiting generates new hypotheses and ideas for extending learning, making connections, and constructing new understandings.

Many media serve as tools for revisiting. These include children's work (drawing, writing, sculpture, etc.), written documentation, photographs, video clips, and instant video segments. As we have become more proficient at using video clips to revisit, we find situations where IVR is more effective for scaffolding learning. IVR is a three-step process: (1) using an 8mm foldout screen camera to videotape children's play, (2) revisiting of the video segments by the teacher, and (3) revisiting of video segments with children and teacher within a period of minutes or hours. Through IVR, we are able to concretely reflect actions back to the child in a sequence of "video frames," or segments that can be frozen in time, of procedural stages that would be too complex for us to communicate in a dialogue. We will present two IVR examples from early childhood classrooms, one in the area of social-emotional relations and the other in the area of story construction.

Extended Use of IVR

Forman (1999) coined the term instant video revisiting and explored the educational value of IVR. According to Forman, IVR happens immediately in the context of the learning experience that it displays on the viewing screen. In one of our examples, the revisiting is immediate, and in another, the revisiting occurs an hour after the videotaped episode.

Our purpose is to illustrate how instant revisiting increases reflective thinking, helping children and teachers to step outside their experience to deepen their understanding and move into a new perspective.

Forman's (1999) introduction to IVR is a series of short vignettes that suggest the many possibilities for use of IVR in the classroom. In our teacher training classrooms, we use technology such as the digital and nondigital video camera with the viewing screen as an essential tool for visualizing and reflecting on children's and teachers' thinking. Therefore, we chose to research the benefits of using IVR throughout the semester in our classrooms. Our examples reflect semester-long use of IVR within the context of spontaneous social conflicts and emergent curriculum centering on story construction.

Visualization and Reflection on Children's Social Conflicts through IVR

Learning social skills is a major developmental task for any child, and social guidance techniques are essential skills for early childhood teachers. Because young children are just learning how to build relationships with others, sometimes their inappropriate social behavior can be misinterpreted. Young children do not have words to express their feelings and needs. They do not connect actions to consequences. Young children are impulsive and self-centered, and they may not recognize others' feelings. They may use any means at their disposal to get what they want and to be understood (Kaiser & Rasminsky, 1999). Most teachers are unprepared for guiding or preventing these types of behavior and consider them as challenging behaviors. The child who exhibits challenging behavior provides plenty of clues for the teacher to see his point of view throughout the day, but the busy teacher often misses the true structure of the child's social experience. We thought IVR could provide the teacher with an outlet to discover what the child's true intent is during a conflict. Most conflicts have an underlying reason that if understood by teacher and child could be considered something other than inappropriate actions of the child(ren). In fact, IVR is able to turn the teacher into an active observer, using reflection to learn the child's hidden agenda during a social conflict.

We began by taping social conflicts and did instant revisiting with the children involved. By using the digital video camera as a VCR playback instrument, the children were able to see their actions in the viewing screen and immediately revisit their experience. Teachers were able to reflect the children's actions back to the children in a sequence of video frames. This IVR technique allowed each child to observe the other child's emotions, to see the reactions to each child's behavior, to reflect on each child's behavior, and to discuss solutions to the problem. The teacher reviewed the videotape immediately to choose the specific segments based on careful reflection that led to the development of meaningful questions. For example, when the teacher reviewed the videotape of Mike taking a book away from Raid, the teacher noticed that Mike tried different strategies, including hurting Raid, to see if he could have the book. Mike was not aware of the consequences of his actions, so the teacher's questions were developed to make Mike reflect on his actions. The teacher was able to plan a level of questioning that guided Mike's reflection of his actions. During the revisiting, the teacher asked him, "I want you to think, how do you think Raid felt when you took the book away from him? If you wanted that book, what could you say to Raid? Do you think that Raid wanted that book? What if both of you wanted to look at the book? What could you do?" Without reviewing the videotape of the children's social conflict, the teacher's intervention questions might not lead to a specific goal. For example, if the same teacher said, "don't grab things from other people," instead of asking questions making Mike reflect on his behavior, then this intervention would have failed to effectively communicate why his actions were wrong, only that his behavior was wrong. Thus, revisiting is essential in teaching children about positive social behavior. The use of IVR can promote better visualization and reflection on the situation, resulting in positive growth for both the children and the teachers. When the teacher watched the videotape to revisit with the children, she began to see things that she had not noticed before and was, thus, able to take the perspectives of each of the children involved in the conflict. The following reflection from the teacher describes the point: "The children are able to handle many conflict situations on their own. Too often, teachers will step into the situation and resolve it for the children. How then are they [the children] to learn or practice problem-solving skills? I found out that as long as they were not physically hurting one another, they often arrived at a situation that was satisfying." First we will describe the social conflict before reviewing the IVR process and what we learned.

View Video of Conflict Resolution (7:30 video clip) (read transcript)	
Quick Time Format (file size: 54 MB)	**RealMedia Format** (file size: 20 MB)

(large file - slow download) (file size: 119 MB) (very large file -- slower download, larger picture) (Download the free QuickTime player)	(streaming file - plays quickly) (Download the free RealMedia player)

The Social Conflict and the Teacher's Reflection

The following dialogue describes one example of how utilizing a digital video camera for instant revisiting assisted in the children's and teacher's understandings of social conflict. One preschool teacher was having a difficult time handling several challenging behaviors among some children in her preschool classroom. This dialogue begins with a conflict situation where Mike (3.5 years old) and Katie (4.5 years old) were playing with magnets and Mike wanted the same magnet wand that Katie wanted. It started when Mike began helping Katie collect magnets from the floor. Katie made a circle with the magnets:

> Katie: Wow! Look at this! I'm putting it into a big circle (Mike watches).
> Mike: "Ok. You need two more (Mike looks for more on the floor).
> Katie reaches for the purple magnet wand, and Mike decides he wants the same magnet wand that is in Katie's hand. The two hold onto the magnet wand and try to pull it away from one another.
> Mike: I want this one.
> Katie: I want this one.
> Katie: Give it back!
> Mike: I want it!
> Katie: Give it back!
> Mike: It's my favorite color!
> Katie: Give it back! I had it!
> After a few struggles, the teacher intervenes.
> Teacher: Katie, what could you do?
> Katie (to Mike): Stop it.
> Teacher: Mike, do you hear Katie's words?
> Mike lets go and begins to cry.
> Mike: I want it.
> Katie goes over back to the magnets and proceeds to play with them. Mike continues to cry.
> Mike: I want that one. It's my favorite color.
> Katie ignores Mike. Mike stops crying, goes over to the magnet wands, and takes the rest of the wands in the basket. He says, "I am going to take all these ones away."
> Katie (to Mike): Do you have mine?
> Mike: No.
> Katie: Where's mine?
> Katie looks under the table. She then looks on top of the table and finds her wand.
> Mike finds some on the floor and says: "Hey, how about these ones?" He puts them in the basket. Then he puts them on the table closer to Katie.

When the teacher reviewed the conflict videotape, she interpreted the situation as follows: "When Katie made the circle, she no longer needed Mike in her play. Mike still wanted to be a part of her play. He didn't know how to invite himself back into her play. He wanted to play with her. His way of showing it was to try and take the same wand she was using. Once Katie got her wand back, she was satisfied. She

didn't take into consideration Mike's feelings or how she could include him in her play again."

When the teacher watched the videotape, she became an observer rather than a participant. The teacher gained a new perspective of what she had previously considered as challenging behaviors. The teacher was able to reflect on both sides of the conflict and see how Katie did not pay attention to Mike's sadness during the conflict situation and how, for Mike, his true intention was to be included in Katie's play. The teacher said, "Now, when Mike does something inappropriate, I view the situation with different eyes. I no longer look at him as a disruptive child, but as one who wants to learn how to have friendship with peers." Knowing the true intent of the children made the teacher feel less frustrated when having to handle various social conflicts. Once the teacher had reflected on the videotape, she chose the frames to revisit with the children and formulated questions. As a consequence, the teacher's questions were more thoughtful, reflective, and were linked together to effectively scaffold the children's thinking. In the following revisiting, the teacher's questions focused on helping Katie to see Mike's intention, to provoke empathetic feelings from Katie, and to provide the opportunity for both of them to discuss their feelings. The following IVR example is one of many episodes used during the semester.

Instant Video Revisiting

An hour later, we revisited the morning conflict using the specific segments of the conflict tape through the foldout screen (see Figure 1). The following is the transcript of the event:

Teacher: What's happening?
Katie: We're fighting.
Teacher: What were you fighting about?
Katie: I wanted that purple magnet.
Teacher: Mike, what do you see?
Mike watches the situation but gives no verbal response.
The tape is rewound again.
Teacher (to Mike): How does Katie feel? (referring to when Mike is trying to take the magnet wand away).
Katie: I feel mad.
Teacher: What did you want, Mike?
Mike: I wanted that (purple magnet wand).
Teacher: You wanted that?
Mike: Uh huh. Because it's my favorite color.
Teacher: You wanted that?
Teacher (to Katie): How's Mike feeling right there, Katie (referring to Mike crying after he let go of the magnet wand)? The teacher is trying to point out Mike's feelings to Katie. She did not pay attention to his sadness during the conflict situation.
Katie: He's feeling sad.
Teacher: What could you do to make him feel better?
Katie: He could pick another one. That would make him happy.
Teacher: Well, is he picking another one?
Katie: No.
Teacher: What could you do to make him feel better?
Katie: Maybe next time I could tell him to remember to share.
Teacher: What if you gave him another one of those magnets?
No response from Katie.
Teacher: Yeah. But did you see how sad he was?
Katie: Yes.
Teacher: What I saw happening is when he was so sad, you just went over and started playing again.
No verbal response from Katie.

Figure 1. The teacher conducts instant video revisiting of a morning social conflict with the children using the foldout screen of a video camera.

Katie and Mike Discuss Their Conflict

Through this next step of the IVR process, the teacher realized that children were able to handle many conflict situations on their own. Too often, teachers will step into the situation and resolve it for the children, which does not help the children learn or practice resolution skills.

Katie: Do you know why I just took it from him?
Teacher: Why?
Katie: I just wanted him to listen that when friends are playing with something you have to get another one instead of taking from friends.
Teacher: Did you hear what Katie just said?
Mike: No.
Teacher: Katie, look at Mike and tell him again. Mike, look at Katie.
Katie: Mike, next time I want you to listen to how I feel when you take something from me. Next time when some friends are playing with something, you got to learn and when someone feels sad you got to say you're sorry.
Teacher: But what did you want Mike to do when he took the magnet wand from you?
Katie: I just want to...(looks to teacher). I'm not done finish talking to him.
Teacher: Go ahead.
Katie (looks at Mike): Mike, next time when you see a friend playing with something, you got to remember to stick it your head. Next time when someone is having something, go get another thing.
Mike: But you know.
Katie: No buts!
Teacher: Let him tell you what he's thinking.
Mike: But you know, Katie, when you got one, you give me one, ok.
The tape was rewound so the children could tell one more time what they saw.
Teacher: Katie, I was wondering in the beginning what would have happened when Mike was trying to take that purple one if you would have given him another one right then. What do you think would have happened?
Katie: Maybe he would have been happy.
Teacher: When Katie was making that circle, did you really want to play with her?
Mike: Uh huh.
Teacher: How could you help Mike play with you with the circle? If he really wanted to play with you?
Katie: You could build a big house.
Teacher: He really liked it. Did you like what Katie made?
Mike: Yes.

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This IVR in conjunction with the video replay and the teacher's questions were crucial in resolving the situation. The children needed to see, through the video replay of IVR, the situation several times to process the conflict in order to understand the meaning of the actions behind their conflict. This IVR provided the children the opportunity to discuss their feelings and learn the feelings of others, which helped the children create empathy for one another. This reflection was possible because they were reframing their behavior and discussing the thoughts behind their actions. As the teacher rewinds the tape several times, she encourages the children to stop at specific instances to visualize their intentions and the consequences of their actions through IVR.

Developing Strategies for Guidance

IVR of videotaped social conflicts helped the teacher visualize and reflect upon the children's development and her teaching. It led her to plan a strategy for guiding the children toward positive social interactions. Her focus shifted from the children's negative behavior toward the positive. She looked for the challenging child's positive relationship with another specific child, which made her question why the challenging child respects a specific child but not the rest of the children. This question led her to videotape his positive relationship to find positive patterns in his social skills. She thought that by using IVR of these positive interactions the child would be able to apply his friendly relationship with one child to his relationship with the rest of the children in the classroom. The teacher hoped that the challenging child would develop an awareness of his actions and how other children react to them. This kind of IVR occurred throughout the semester with all the children in the classroom and helped the teachers scaffold the children's ongoing learning. The next example shows an instance where IVR was used immediately after the videotaping within the context of the story construction process.

IVR and Story Construction

Learning about story development requires an understanding that stories have beginnings, middles, and ends. The middle is particularly complex for the pre-operational child to conceptualize. Young children need to experience and explore these concepts in multiple ways (Fields & Spangler, 2000; Clay, 1998). They experience stories in their dramatic play, have stories read to them, and create stories with pictures, words, and bodily representations. Teachers can use IVR as a tool to frame the specific parts of their stories that provoke children to think about beginning, middle, and end.

Our story begins with an overview of the curriculum leading up to the teachable moment where IVR could make a difference by providing Ricardo (4 years old) with the opportunity to contrast and analyze two concrete examples of a story he is creating. The IVR served as a tool to extend his thinking and motivated Ricardo to remain engaged with his story in order to solve the problem he discovered and finish it to his satisfaction.

Ricardo's and His Friends' Knowledge of Story

This snapshot overview includes Ricardo and his two friends, each marking a set of symbols along drawn lines on separate sheets of paper in response to their teacher's request, "Can you tell me the story of your fantasy play?" They respond by drawing "symbol maps" of graphics along a line. Their representations show that they have assimilated the knowledge that stories can be communicated as sequences of symbols along a line. It is an idea they had experienced in many areas of the classroom where there were opportunities to sequence a "whole class symbol system" that had been created as a representation of a group story invented during circle time. The children and adults drew these symbols that tell the story of two friends who leave their house and go on a hike along a path to a mountain lake. The symbols represent things along the hike:

- a triangular roof as a house
- a square representing a parking lot

- a cross representing the beginning of the trail
- a line that curves upward forming a bridge
- two wavy lines depicting a river
- a triangle representing a mountain
- a bear created with two circle eyes, a dot for a nose, and a rectangle body
- a gorilla encountered along the way represented by a stick figure
- a circular head with wings and a tail as one of the geese flying overhead
- three circles grouped together representing rocks to climb over
- a large circle representing the lake at the end of the hike
- a half moon and a star in the sky

In the process of constructing stories with these symbols, the children added a zigzag line that looked like steps as a representation of climbing.

We considered this set of pictographs a "whole-class" system because the day after its invention, a majority of children in the classroom provided clear interest in the graphics and evidence of being able to "read" them aloud. When asked, the children said they were reading the pictures even though they were accompanied by words depicting the children's meaning.

The children were playing with two noteworthy sequencing strategies: (1) using reproductions of the symbol system (stamps) to construct sequences along a drawn line with "beginning" and "end" points, and (2) sequencing reproductions of the symbol system (cards) in relation to their order in the original "story map." The "beginning" and "end" features allowed children to establish the proper positions for "once upon a time" openings and closings with "the end."

Eventually, Ricardo participated in a collaborative project where he and his friends transformed their individual "story maps" into one mural. They made puppets that they could play with behind the mural, which could serve as a puppet stage.

Our observations informed us that the children's knowledge of beginnings and ends did not transfer into their puppet play. Thus, their puppet shows had no end points. Stories went on and on and on, often without particular reference to what just happened. A tale of a cougar hunting food one moment could be replaced with a fragment about a fireman. It was as if each child wanted to say something so the subsequent child just tagged on his story to the end of the first child's story. Teachers wondered if children could really understand the concepts of "beginning" and "end" without a contextual understanding of "middle." In an analysis of a story during circle time, children decided that a middle of a story was a "problem that had to be solved."

This insight about the concept "middle" led us to establish an area for performing familiar plays where children could experience the problem in the middle. Ricardo was a frequent participant. Teachers drew symbols, such as a girl with a hood or a wolf's head, in a sequence to show the linear progression of stories such as "Little Red Riding Hood" and "The Three Billy Goats Gruff" with pictographs on a nearby easel where children could see their place in the story. The symbol sequence served as another medium for children to identify the parts of their story. This sequencing of pictographs differed from the previously used "whole-class system" because they were generated by teachers as representations of an existing story not by children in the construction of a story. They were intentionally sequenced in the left to right pattern of written language to scaffold the children's understanding of the sequencing of story symbols along a line that they previously drew on paper.

The Provocation

One day, the stage was still set up for performance, but there was a change in focus. The teachers wondered if the children would transfer their experiences from enacting "familiar" stories to creating and enacting their "own" stories. Teachers drew the "whole-class symbols" onto cards that were placed in the clear plastic pockets of a hanging chart near the stage. They hoped the cards would provoke children to create their own plays by sequencing these cards into meaningful stories. Pads of paper, blank cards for

the chart pockets, and pencils were available for children to draw new symbols.

We had four questions to pose to children that would help us to notice more complexity of thought: Can you use these symbols (1) to write a play, (2) to tell the story of your play, (3) to perform a play, (4) to direct a play? The play writing would engage children in the sequencing of one symbol after another, matching each to a corresponding idea while also using the elements of story structure that they knew.

Our observations of children creating stories by stamping symbols in a sequence along a line revealed that our children already knew that stories have beginnings and endings with actions in the middle. We thought that telling the stories they created with symbols would provide children the opportunity to interpret their symbols verbally, forming a relationship between the symbol and their idea of its meaning. Performing these stories would allow them to enhance the meaning of their verbal transaction of the symbols with action and gestures. In directing, the child would have some expectation that the other performers will understand their point of view in order to follow the roles of his or her play and will learn variations of meaning through others' interpretations. Finally, we believed that the sequencing of symbols in the chart afforded the opportunity to discuss layers of complexity in story structure, such as the middle of a story, because the sequence would allow them to "see" their story as meaningful segments. Up to this point, our children did not reveal concrete ideas about what the "middle" of a story might be.

In our experience with constructive learning, we realized that children often chose a path that was anticipated by teachers although not necessarily expected. Thus, we found that Ricardo did not choose to create a play with the symbols that already existed on the cards in the hanging chart. Instead he "wrote" a play.

With newly invented symbols, Ricardo drew in a left to right progression on the notepad, verbalizing the story while drawing (see Figure 2). Next, Ricardo wanted to enact his story. He found the right props and used a clothespin (provided by his teacher) to attach his "story map" onto the chart where he could see it. He decided on his role as the fairy with the magic wand and assigned another fairy role to his teacher. This one teacher took on the additional roles while another teacher videotaped the performance.

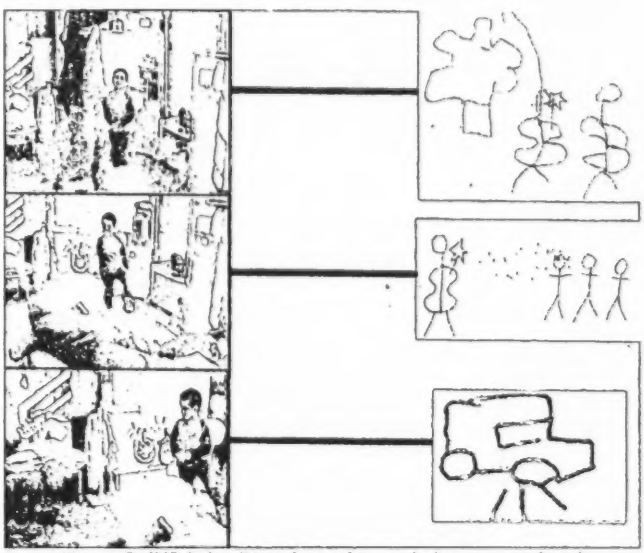

Figure 2. IVR helps Ricardo see his symbol map as isolated images that relate to individual frames of the enacted story.

While she was acting out the numerous roles, Ricardo's teacher asked him what happened next when she did not remember her part. At these points, Ricardo stepped outside of his fairy role to look for clues on the "story map" about what action came next. In the first instance, the teacher did not know what happened after the fairy turned her (when she is representing the audience) into a lizard, so Ricardo

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looked at his "story map" and back to his teacher, then back to his "story map" while pointing to it and said, "into a car." Next, when the teacher, acting as the car, arrived at the hospital, Ricardo said, "It has a flat tire," and he looked to his "story map" to verify his direction.

Other children watched the performance and expressed interest in performing his play, so Ricardo read through his "story map" in preparation. His teachers used this opportunity to build on previous knowledge about beginnings, middles, and ends of stories by asking him to determine the middle of his story. He looked at the story map for a long time without speaking. To provoke his thinking, his teacher pointed to the figures of two fairies next to the tree (#4 in Figure 3) and said, "I see this part where the fairy jumps out as a problem. Is that the middle?" Ricardo said, "No that's not a problem."

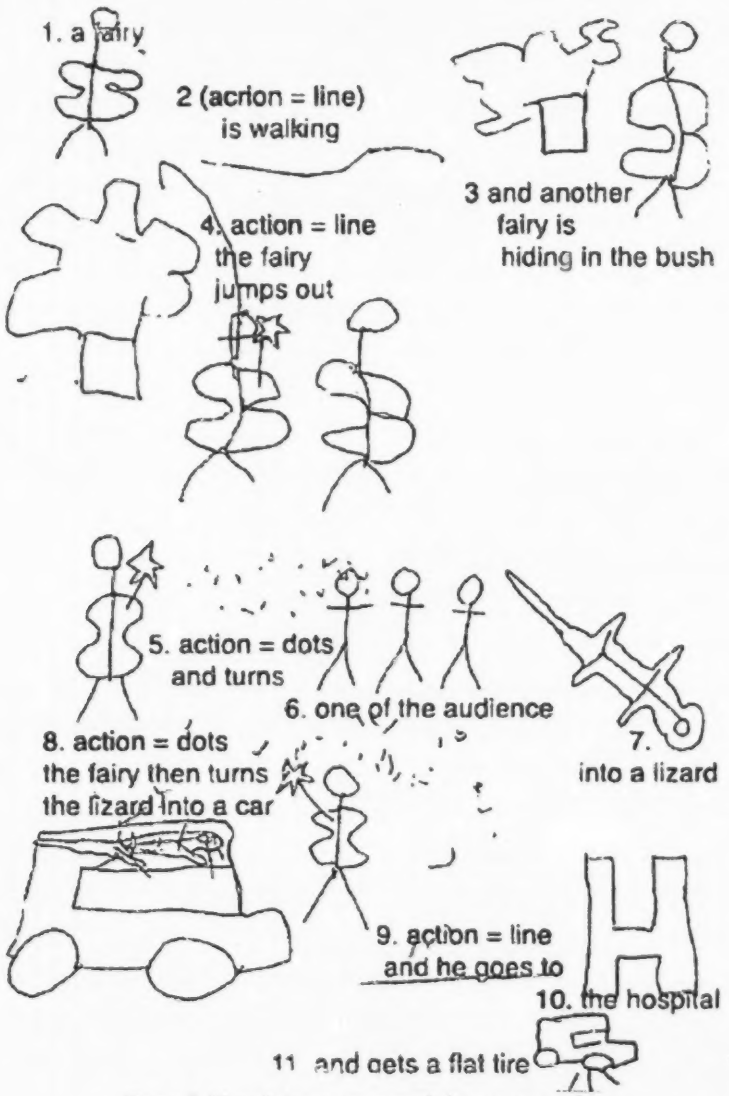

Figure 3. Ricardo invents new symbols to create a play.

The teacher wondered: Does the symbol map force Ricardo to see the story as a "whole picture" (single entity) or as separate parts with a beginning, middle, and end? Would IVR help Ricardo isolate the story into individual frames?

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Scaffolding with IVR

Within the course of their discussion about the beginning, middle, and end of his play, which took place immediately after Ricardo acted it out with his teacher, the teacher used IVR to test her hypothesis. She asked Ricardo if he would like to see the movie of the two of them acting out his play, and he agreed. She handed him his "story map" and replayed the entire enactment. When he saw his teacher get onto her belly after he flicked his wand at her, Ricardo said, "The middle is when the fairy turns the audience into a lizard." His teacher paused the replay as Ricardo immediately pointed to the symbols in his "story map" that represented the lizard (transformed audience).

His teacher wondered "Is there a problem when the fairy turns the audience into a lizard?" as she began to roll the videotape forward from the point where it had paused. Ricardo watched.

"No, the problem is when they get the flat tire," he said as he saw the video footage of himself telling his teacher to have a flat tire and her response, which was to touch her elbow as she knelt on the floor representing the car. The enactment ended at this point, the teacher paused the videotape, and Ricardo immediately pointed to the flat tire symbol that he had drawn. They had now identified three potential problems in his story.

The teacher asked, "Oh, if there are three problems, when the fairy is surprised, when the fairy turns the audience into a lizard, and when they get a flat tire, then where is the middle of the story?"

Ricardo pointed to the symbol of the flat tire on the "story map" and said, "This is a problem that needs to be solved. This is the middle of the story." "Does that mean this [the flat tire] is the end?" The teacher challenged Ricardo to decide whether the middle could be at the end of the story.

He told her, "I need to finish it," and then went to the paper where he arranged nine symbols into a sequence that ended his story, enlisting his teacher's help with the drawing of a couple of symbols (see Figure 4). He asked his teacher to draw an H for the hospital, followed by the lizard, and then a line. He said that these symbols meant, "The lizard came out of the hospital and went." Then he asked his teacher to draw the lizard in the car and told her it meant "into the car." He then drew a line as he said, "When it came out." Next he drew a fairy and said, "It was a fairy again." His three final symbols were a line, a house, and a fairy with a magic wand. He told his teacher that they meant "who went back home to his wife fairy." He ended his story with a home and a family.

The Lizard came out of the hospital and went
into a car.
When it came out it was a fairy again.
Who went back home to his wife (husband) fairy.

Figure 4. The problem at the end that IVR reveals motivates Ricardo to complete his story with nine new symbols.

On another day, the teachers revisited the video footage with the whole class. First, Ricardo told the first part of his story to the group by reading his "story map" (projected onto a large surface with an overhead) and simultaneously pointing to the symbols with a stick. He was reading the part that he initially drew and considered to be unfinished. The children were invited to watch the video replay of the enactment by Ricardo and his teacher, and to then to point out what they thought were the problems in the story.

Child one took the pointer, pointed to the flat tire at the end, and said,"This is a problem." Child two pointed to the lizard and then immediately moved the pointer to the flat tire. Her teacher said, "I noticed you pointed up here (pointing to the lizard)." She responded by saying, "I thought it was the flat tire." Her teacher thought that maybe she changed her mind to keep in agreement with her peer who just had a turn so she added, "It's ok to find more than one problem. Can you tell us what the problem was?" Child two said, "When the audience turned into a lizard." The teacher responded with, "That could be another problem." Child three pointed to the first car symbol and said, "The fairy turned him into a car." The teacher added, "that is another problem." Child four nonverbally agreed with child three by pointing to the first car symbol, and child five nonverbally agreed with child one by pointing to the flat tire symbol.

The teacher now added, "The thing that's interesting is that for some of us you're pointing to that as the problem (pointing to the flat tire symbol). Would you agree with me that the beginning of the story is kind of up here (pointing to top of page), and the middle of the story is kind of here (pointing to middle of page), and this is the end of the story, down here (pointing to bottom)?"

Child five then added, "I see some problems at the top. When the fairly surprised that one," as she pointed to the symbol of the fairly jumping from behind the bush. Teacher, "That could be a problem."

Ricardo then took the pointer and pointed to the flat tire symbol while saying, "The story isn't finished because this is a problem that needs to be solved." The teachers asked if other children agreed, and a majority agreed with Ricardo who was then invited to share the end of his story with the group. The

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teachers then asked if the other problems were in the middle. Child five said, "Yes, because they need to be solved," and a majority of children agreed.

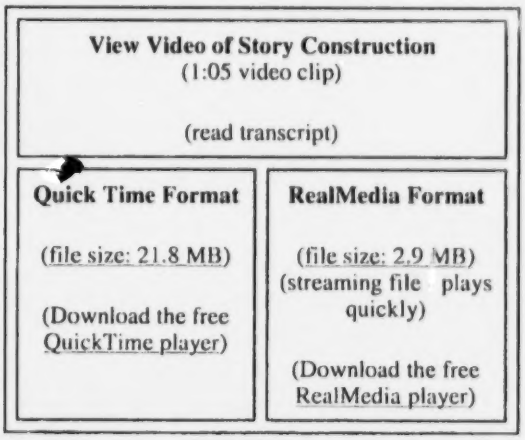
This discussion allowed the children to scaffold one another's understanding of story parts, and the children learned that a story could have more than one problem in the middle.

What Teachers Learned

The IVR provided a realistic view that enhanced the children's understanding of the symbol sequence. Ricardo seemed to see the story map as a whole picture, while the IVR revealed one problem at a time so that he could identify each as separate from the entire sequence. Remember, as he viewed the video replay of the performance, he identified each problem in the enactment and immediately pointed to its corresponding symbol in his "story map" as his teacher paused the tape. This approach promoted his concept of story structure as having segmented parts.

The value of having the "symbol map" on hand while viewing the video is that it provided two formats for Ricardo to contrast. In his review of his "symbol map," when asked to locate the middle, his teachers thought Ricardo conceptualized the sequence in its entirety, as a "whole" story. The act of pointing to the parts of his "story map" that corresponded to those he commented on while viewing the video led his teachers to believe that the video helped him "see" the actions as isolated instances that he could relate to the sequence of instances marked in his "symbol map."

Both media reveal the possibility that three problems could be situated along the linear sequence of the story and in combination could represent the middle of the story. The data do not reveal if Ricardo had assimilated the idea that the middle of a story is a combination of problems or that the first two problems in his story were solved. However, this approach did provide him with evidence of a problem that was left unsolved at the end of his sequence of symbols. When he pointed to his symbol of a car with a flat tire and said, "This is a problem that needs to be solved," he revealed a concept of a story that required him to solve the unresolved problem regardless of other problems cited in the story.



Conclusion

Both IVR episodes described in this study provide evidence that the children are attracted to revisiting previous events by watching their actions on the viewing screen of the video camera. This process engages them and with the thoughtful provocation of teachers can be used as a tool to contrast a view of events with the child's understanding of the actual event. Thus, IVR aids the children's construction of knowledge, providing a format for developing their understanding of social conflicts and story structure.

Young children construct knowledge about interpersonal relations when they have the opportunity to reflect on social conflicts in their lives, make mistakes, experience their consequences, and develop their own reasons for solving problems. IVR is a tool promoting a meta-perspective that helps children reflect on their behavior from the perspective of the other child. IVR gives the teacher the opportunity to see the child's actions in a new light. Teachers using IVR recognized the need to step away from the difficulty of a situation to reflect and review in order to isolate specific segments to question and wonder about with the children. It helps the teacher guide children to recognize various points of view, raise issues of fairness, and encourage solutions to interpersonal problems. By taking this extra hour or so in the day, the teacher is allowing the children to move beyond the difficulty, waiting for the children to be in a clear state for the reflection process. The reality of the video presentation is potent enough to draw the children into a dialogue that the teacher can facilitate with careful questioning that draws out and extends the children's thoughts. This method benefits both the teacher and the children.

When IVR was used in a part of the children's learning process where sequencing, as opposed to affect, is the focus of the child's cognitive conflict, teachers learned that revisiting can take place on-the-spot when the camera is available to document the learning events. In the story construction episode, the IVR helped the child formulate whole-to-part relationships that would be too complex to articulate in words. Although researchers on reading and writing debate the benefits of phonics and whole language approaches to literacy (Barbour, 1999; Williams, 2000), there is evidence that among children from second grade into middle school years an understanding of story structure promotes better comprehension of stories (Williams, 2000). IVR has the potential to help young children articulate and analyze their many representations of an individual story, supporting their developing understanding of story structure, which in turn strengthens their skill with story comprehension. IVR can be used as a reflective tool in other areas of children's play where sequencing occurs, such as when a child's block structure falls over during construction. IVR at this point can help the child to focus on and contrast individual segments of the building process as unsuccessful (leading the tower to tumble) or successful (allowing the tower to get taller) strategies. Knowing how to do a somersault is different from understanding how one action of the somersault relates to another. IVR helps children to recognize and articulate those differences.

In conclusion, we have found that there are several advantages to utilizing videotaping and IVR in the classroom with regard to social conflicts. IVR gave the teacher the opportunity to discover the true intent of the child who exhibited challenging behavior and to see the child's actions in a new light. The teacher no longer looked at the child as disruptive, but as one who wanted to learn how to have friendship with peers. Further revisiting of videotapes of social interactions involving this child revealed that the child who exhibited challenging behavior indeed had a meaningful and positive friendship with that specific child. After revisiting his positive interaction with that child, the teacher tried to find patterns for him to apply with the other children in the classroom.

The success of IVR in these two instances suggests the need to research the use of IVR as a tool for scaffolding in other areas of the early childhood classroom.

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